SBI4U

**Population Dynamics - Unit in Review**

Review material in the following sections of the textbook and focus on the specific topics listed below:

-12.1, 12.2, 12.3, 12.4, 12.5

Key terms from the textbook are in **bold face**.

Population Characteristics (12.1)

-distinguish between:

-**geographic range** & **habitat**

-**population size (Nt)** & **population density (D)**

-**crude density** & **ecological density**

-compare & contrast the 3 patterns of **dispersion** in populations

-describe the **quadrat** sampling technique & be able to estimate population size & density from

collected data [Practice questions #1,2 (p.589)]

-describe the **mark-recapture method** ofsampling & be able to estimate population size from

collected data [Practice questions #1,2,3 (p.590)]

-give examples of methods of tracking animals

Demography (12.2)

-define **demography** & describe population growth in terms of **natality**, **mortality**, **immigration**, and

**emigration**

-interpret information in a **life table** [See Table 1, p.593]

-distinguish between **age-specific mortality** & **age-specific survivorship** and describe their

mathematical relationship

-describe characteristics of populations showing the 3 types of **survivorship curves**

-describe how **generation time** and **sex ratio** affect **fecundity**

Modelling Population Growth (12.3)

-define **population dynamics**, **per capita growth rate (r)**, **zero population growth (ZPG)**

-compare & contrast the **exponential & logistic models of population growth**

**-**characteristics, examples, shape of curve, limitations (assumptions)

-calculate population growth rate using the formulas: dN = rN and dN = rmaxN x (K – N)

dt dt K

-calculate doubling time for exponential growth using the formula: td = 0.69

r

Factors that Affect Population Growth (12.4)

-define **limiting factors**, the **Allee effect**, **minimum viable population size**, competitive exclusion

principle, **resource partitioning**

-distinguish between **density-dependent factors** and **density-independent factors**

-give examples of each (**competition**, **predation**, etc.)

-distinguish between **interspecific** & **intraspecific competition**

Interactions Between Individuals (12.5)

-define **coevolution**

-give examples of the following species interactions:

-predation/herbivory

-competition

-mutualism

-commensalism

-parasitism

-give examples of adaptations of predators to better catch their prey (e.g., heat sensors in

rattlesnakes, chemical sensors on insect legs, etc.) & of prey to evade or defend against

predators (e.g., camouflage, chemical defence, behavioural defence, **mimicry**, etc.)

-describe the population cycles that occur in typical predator-prey relationships

-distinguish between:

-**interference competition** & **exploitative competition**

-**fundamental niche** & **realized niche**

-give examples of how human intervention can upset the dynamic equilibrium in ecosystems

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| **Evaluation:** | **Date:** | **Categories:** | | | |
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| Chapter 12 Quiz | Wednesday, January 13th, 2016 | √ |  | √ |  |